

9. (Twice Amended) A method of reducing high tensile stress zones in the surface of a part comprising the steps of:

selecting a region of the part to be treated; and

programming a control unit of a burnishing apparatus to perform a burnishing operation, the burnishing operation being performed such that the density of burnishing, the magnitude of compression, and the pressure being applied against the surface are varied to reduce the high tensile stress zones along the boundaries of the selected region.

RESPONSE

The Applicant wishes to thank the Examiner for the telephonic conference call interview on March 25, 2003, concerning the subject Application. The participants of the interview were Paul S. Prevey III (Applicant), Mark F. Smith (attorney), George P. Brandenburg (attorney) and Lilybett Martir (Examiner). No exhibit or demonstration was conducted. The discussion was directed to the rejection of the subject claims in view of U.S. Patent No. 5,826,453 to Prevey III. An agreement with respect to the claims was not reached. Independent Claims 1 and 9, however, have been amended as suggested by the Examiner to place them in better order for issuance.

The rejection of Claims 1 - 11 under 35 U.S.C. 103(a) as being anticipated by U.S. Patent No. 5,826,453 to Prevey, III is respectfully traversed.

The Examiner takes the position that Prevey III teaches selecting a region of the part to be treated and exerting pressure against the surface of the selected region. The Examiner acknowledges that Prevey III fails to literally disclose the pressure being applied such that the magnitude of compression decreases in the direction towards the boundaries of the selected region to minimize the effects of any tensile stress zones near the boundaries. One of ordinary skill in the art would have readily recognized the advantages and desirability of applying pressure in a way such that the magnitude of compression decreases in a predetermined way on a selected region since the claimed process is a result of selecting a predetermined pattern following the teachings of Prevey III.

The Applicant respectfully submits that Claim 1, as amended, requires "...exerting a variable pressure against the surface of the selected region, the pressure being applied such that the magnitude of compression decreases in the direction towards the boundaries of the selected region to minimize the effects of any tensile stress zones near the boundaries." Claim 9, as amended, provides that "...programming a control unit of a burnishing apparatus to perform a burnishing operation, the burnishing operation being performed such that the density of burnishing, the magnitude of compression, and the pressure being applied against the surface are varied to reduce the high tensile stress zones along the boundaries of the selected region."

In contrast, the method taught in Prevey, III provides for directing a burnishing apparatus to make a plurality of passes over a workpiece **to provide the maximum compressive residual stress with the minimum of cold working and surface hardening** (Col.3, lines 5 – 8). The burnishing means is passed is a predetermined pattern across the area to be burnished such that the zones of deformation formed by each pass of the burnishing means do not overlap (Col. 5, lines 4 – 7). While the method of Prevey, III teaches the use of a burnishing apparatus to induce compressive residual stress by directing the burnishing means to make a plurality of passes over the workpiece **such that the zones of deformation formed by each pass do not overlap**, the Applicant is unable to find any teaching or suggestion of applying pressure such that the magnitude of compression *decreases in the direction towards the boundaries of the selected region* or that the *density of burnishing and the magnitude of compression are varied to reduce the high tensile stress along the boundaries of the selected region*.

The method of the subject application was developed as part of an on-going development effort by the Applicant. Independent claims 1 and 9, as amended, now make it clear that the method claimed operates to reduce or eliminate the high tensile stress zones that may exist along the boundaries of the selected region. Further, the method of the subject application is not restricted to a pattern whereby the zones of deformation formed by each

pass of the burnishing means or any other compression means do not overlap but rather that the magnitude of compression decreases in the direction towards the boundaries of the selected region in order to reduce the tensile stresses along the boundaries. In contrast, Prevey III does not teach the benefits of any particular burnishing pattern and there is **no teaching** or suggestion that tensile residual stresses may exist along the boundaries or that **it would be desirable** to reduce any such tensile stresses near the boundaries, or that **the method** of reducing such tensile stresses would be by means of gradually reducing the magnitude of compression or the density of burnishing and the magnitude of compression in the direction of the boundaries. Such teachings are only taught by the subject application. Accordingly, there is **no incentive** to perform the method of reducing the magnitude of compression towards the boundaries or varying the density of burnishing and the magnitude of compression to reduce high tensile stress along the boundaries of the selected region as a remedy.

In view of the foregoing, the rejection of Claims 1 - 11 as being rejected under 35 U.S.C. 103(a) as being anticipated by Prevey, III should be withdrawn.

In view of the foregoing remarks, it is respectfully submitted that all of the Claims now pending are allowable over the art of record. Reconsideration of all claims now in this application is respectfully requested.

Respectfully submitted,



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